

# A Multi-Scale Analysis of the 1 July 2016 Tornado Watch across Eastern New York and Western New England

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On 1 July 2016, a fairly widespread severe weather event occurred across much of eastern New York (NY), and portions of New England that extended southward into the Mid-Atlantic Region. The NCEP Storm Prediction Center posted an enhanced risk early that afternoon for much of eastern NY, northeast Pennsylvania (PA), northern New Jersey (NJ), and western New England. A tornado watch was issued shortly thereafter for much of eastern NY, northeast PA, northern NJ, Vermont, northwest Connecticut and western Massachusetts. There were no tornado reports that day in the Northeast. The NWS at Albany forecast area had 25 severe reports with a half dozen being marginal large hail (1.9 cm in diameter).

Observational data, as well as short range deterministic Rapid Refresh data suggested a significant severe weather outbreak would likely occur. A cyclonically curved upper-level jet was located well upstream of NY over the Great Lakes Region with an area of divergence migrating into the Northeast during the afternoon. Surface based convective available potential energy values were in the 500-1500 J kg<sup>-1</sup> range with marginal mid-level lapse rates and lifting condensation level heights. The effective shear values were in the 35-45 knot range in the Tornado Watch box, suggesting the possibility of supercells with rotating updrafts capable of producing tornadoes. The shear was strongest in the 3-6 km layer over eastern NY and western New England, and the instability was more limited for locations north and east Albany.

This talk will focus on a detailed mesoscale and radar analysis of the event. Traditional base and derived WSR-88D radar products will also be shown in conjunction with some Dual-Pol data. The storm-scale analysis will focus on helpful forecast techniques, including applying results from a local 1-inch hail and tornado V-R Shear study to determine what produced the copious wind and large hail reports and contributed to the paucity of tornadoes. Finally, the societal impacts concerning Tornado Watches in the Northeast will be briefly discussed